

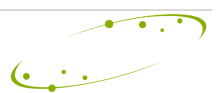
2013

NASA AMES ACADEMY

*For Space
Exploration*



Academy Profile Book
NASA Ames Research Center
Moffett Field, CA



NASA Ames Academy for Space Exploration 2013 Profiles

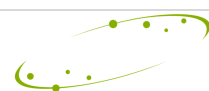
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NASA Ames Academy for Space Exploration

Introduction

The NASA Ames Academies are unique summer institutes of higher learning whose goal is to help guide future leaders of the U.S. Space and Aeronautics Programs by giving them a glimpse of how the whole system works. NASA's success is a result of the interaction between government, academia, and the private sector, each playing a critical and different role in the 55-year-old civil program. Responsibilities overlap, leaders migrate from one sector to another, and interdependence changes with each new administration.

NASA's Charter, written in the 1958 Space Act, gives NASA the main role of using and exploring space for the betterment of humankind while developing technologies which benefit life on Earth. Congress and the President have both supported and restrained NASA as its programs have evolved. President John F. Kennedy's vision of putting a man on the Moon within the decade included much more than the Apollo spectacular of newspaper fame. After Apollo's success, NASA has constantly sought to redefine its goals and fine-tune its schedule every year while seeking a budget to match its imagination. We have explored most of the planets, measured the solar system, flown humans in long-term endurance missions and short-term operational missions, invented new technology, and trained Congress, teachers, students, business people, and engineers, developing a whole new generation familiar with the expertise of the "Space Age."

The NASA Ames Research Center

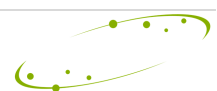
The Ames Research Center (ARC), located at Moffett Field, California, in the heart of Silicon Valley, specializes in revealing new knowledge about the universe, planetary systems, and life science and in creating new technologies that enable exciting new ventures in aeronautics and space exploration. Throughout its history, results from research at Ames have significantly influenced national and international policy, enabled most of the major space missions of the past thirty years, and contributed to scientific discoveries and engineering insights that have rewritten the textbooks. In the process of these endeavors, Ames has made numerous contributions to environmental protection, public health, and the nation's economic wellbeing.

Ames is unique in having world-class ground, airborne, and space flight research capabilities in aeronautics, astrophysics, earth sciences, astrobiology, fluid dynamics, gravitational biology, thermal protection technology, computational chemistry, planetary atmospheres, space laboratories, information sciences, and spacecraft life support.

As a result, Ames supports all aspects of the NASA vision to expand human presences to the Moon and eventually to Mars and acts as a technical bridge to transfer skill, knowledge, and technologies among the NASA activities. This multidisciplinary synergy has created the world's only capability for the comprehensive study of Astrobiology -- life's origin, evolution, and distribution in the universe and destiny, from the protection of our planet to the evolution of terrestrial life into space.

Ames is the lead Center for understanding the effects of gravity on living things. Ames plays a major role in understanding the origin, evolution, and distribution of stars, planets, and life in the universe. One important activity is Ames' unique research in atmosphere and ecosystems science in support of Mission to Planet Earth and the protection of the global environment. In space technologies, Ames is also the lead Center in providing the thermal protection systems that are critical for future access to space and planetary atmospheric entry vehicles. Ames is NASA's Center of Excellence in Information Systems Technologies, encompassing research in supercomputing, networking, numerical computing software, artificial intelligence, and human factors to enable bold advances in aeronautics and space.

Ames leads the Agency in virtual institutes as the NASA Astrobiology Institute, the NASA Lunar Science Institute and the NASA Aeronautics Research Institute are located here. The virtual institutes combine diverse interdisciplinary collaborations with international partnerships, training the next generation of researchers and education and public outreach in order to push the boundaries on their respective



sciences. All Institutes have been very influential with the NASA Academy through training and support of students in the program.

In aeronautics, Ames is the Agency's lead Center in airspace operations systems, including air traffic control and human factors, and the lead Center for rotorcraft technology. Ames also has major responsibilities in the creation of design and development process tools and in wind tunnel testing.

About 1600 civil servants and over 2000 contractor personnel are employed at Ames. In addition, Ames is proud to host more than 500 graduate students, cooperative education students, post-doctoral fellows, and university faculty members who work in collaboration with Ames' preeminent scientists and technologists.

Ames is a pioneer in the application of the multidisciplinary approach in science, technology, and projects, that is, combining the perspectives, training, and technologies of a variety of disciplined experts to attack problems of exceptional difficulty. Multidisciplinary approaches are flexible and tend to stimulate cutting edge concepts. Successful application of this technique requires a deep appreciation for the talents, skills, and insights of others and ability to cross organizational lines to reveal hidden treasures of understanding. Today, more and more scientists and high tech industries are using this approach with remarkable results.

It is in this spirit of shared discovery and the synthesis of diverse talents that Ames offers the NASA Academy at Ames. Students will contribute to every aspect of successful multidisciplinary research on Earth, in the air, and in space, from the formulation of an idea to the procurement of goods and services necessary to develop it, through the management, marketing, and manufacturing necessary to turn a concept into a reality.

The Academy

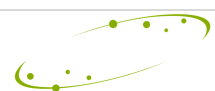
One goal of the Academy is to provide insight into all of the elements that make the NASA missions possible, while at the same time assigning the student to one of our best researchers to contribute towards one of our missions. Each student will be handpicked by a series of gates -- panels, interviews, etc., starting with their own State Space Grant Consortium who has selected and agreed to sponsor them. The researchers at Ames are selected to provide a diverse set of tasks that covers all aspects of on-going work at the Center. The "match" between student (Research Associate) and researcher (Principal Investigator) will be done by mutual selection.

70% percent of the time at Ames will be spent in the laboratory of the selected Principal Investigator assisting in research. About 30% of the working time and most of the social time of the students will be spent as a "group" or "team" in plenary sessions. This time will be devoted to exchange of ideas, on forays into the highest level of decision making, prioritizing, planning, and executing NASA's missions. This will be done by interviews with leaders and motivators of the space and aeronautics programs. Besides the domestic Ames' experts, we will bring in leaders from the aerospace, high-tech, and genetic engineering firms in Silicon Valley; local, state, and national political decision makers; international partners; advocates and adversaries of space exploration.

Activities – June 10th – August 14th

These dates were selected to give most students a breather before returning to school. We know this is a compromise, as no two schools have identical schedules. **It is important that the students begin together and all end together.** The success of this Academy depends not on us as much as all of the students. **We do not accept people who are not able to attend this entire period. All students must be U.S. citizens or hold a "green card." Specific exemption may be made if a national space agency is involved.**

Our intention is to assure that the students interact as a "team." We will always try to spark their leadership qualities. While we encourage the students to stay together as much as possible, we do not want them to feel trapped. All students will be housed a short drive from Moffett Field with transportation provided each day.



The west coast offers various unique opportunities for group activities including local trips to Lick Observatory, Monterey Bay Aquarium Research Institute, and Space Systems Loral among other destinations. The selected students will plan additional weekend trips when they arrive which have included in the past trips to NASA Centers, such as the Jet Propulsion Laboratory and Dryden Flight Research Center. Each of the ten weeks will be a unique group experience, but at the same time the students will be working on a research project with Investigators in the Ames' laboratories or on our flight projects.

The Academy Experience

Over the past 15 summers, 11 - 15 students from all over the U.S. who were interested in life, space, or Earth sciences, space technology, or space engineering were selected for the 10 week session to share a unique experience resulting from their own ingenuity and free spirit. Teaching and learning are not the same. Teaching is the orthodoxy of our universities and colleges; learning is the "ah-ha!" process of finding out and understanding. That is our objective: to foster curiosity, to spirit endeavor, and to inspire leadership.

All of these elements make the Ames Academies a unique experience that will last a lifetime. Students not only participate in the Academy, but are inducted into the larger Academy Family through the NASA Academy Alumni Association (NAAA). It's been said many times by Academy students in the past, and we're sure it'll be true again this summer: "This has been the best summer of my life!!"

Student Support

The NASA Academy program is co-sponsored by the participating NASA Center and the National Space Grant College and Fellowship Program. Most State Space Grant Consortium offices, as well as the Space Grant offices of the District of Columbia and Puerto Rico, support the program. Please check with the Space Grant office in your State for participation information. Space Grant Consortia offices agree to provide the students with summer stipend support and round-trip transportation to and from the participating NASA Center. The participating NASA Center agrees to host the student, providing housing, local transportation, and meals. More information on the National Space Grant College and Fellowship Program is found at: <http://www.hq.nasa.gov/spacegrant/>

Student Eligibility

- Demonstrated interest in NASA's work
- Enrolled as a junior, senior, or graduate student (as of June 1 of the program year)
- Maintain an overall B plus average
- Majoring in science (physics, chemistry, biology, etc.), math, engineering, computer science, or other areas of interest to the space program
- Be a US citizen or permanent resident (as of June 1 of the program year) or be sponsored by a participating space agency

Contact Information

NASA Academy information is obtained through these sources:

NASA Academy Alumni Association: <http://www.nasa-academy.org>

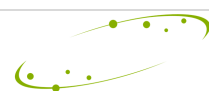
NASA Ames Academies: <http://academy.arc.nasa.gov>

Telephone & Email

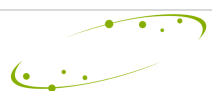
1 (650) 604-2104
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NASA Ames Research Center
M/S 17-1
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2013 Research Associate Profiles



Mitsuhisa Baba

Waseda University

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Applied Mechanics

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Principal Investigator: Dr. William Warmbrodt and Larry Young



Education and Experience:

My passion for space started when I encountered small cube sat programs during my third year in Waseda University. This cube sat fascinated me extremely, and it was a catalyst to expand my interest in space environment. With this experience, I want to develop our involvement in space in the future.

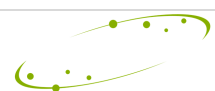
I received my Bachelor's Degree in Applied Mechanics and Aerospace Engineering from Waseda University in 2012. Currently, I am in the Graduate Program of the School of Fundamental Science and Engineering in the same university. Therefore, I am interested in space satellites as well as machines including planes and rotorcrafts.

My current research involves the problems posed by space debris. I am doing research through the educational activities for graduate students at Japan Aerospace Exploration Agency (JAXA). In particular, I have focused on the deployment of an Electrodynamic Tether (EDT) that will serve as a space debris removal system while collaborating with Kagawa University in Japan to develop a small satellite containing an EDT. This satellite will be scheduled to launch soon. I gave an oral presentation of my research at International Astronautical Congress (IAC) 2012 in Naples, Italy. Moreover, I was chosen as JAXA's sponsored student in IAC 2012 and formed a strong connection with the other sponsored students from other space agencies to collaborate with these students in the future. This experience pushed me to pursue further careers in space science and engineering.

I am looking forward to challenging dynamic course work and projects for my peers by participating in 10-week academic program at NASA and with NASA scientists and educators. My experience through this program will push me out of my comfort zone in Japan. It is an opportunity to meet space experts and future colleagues.

Future plans:

I plan to pursue a career in space science and engineering in academia and/or industry and display my leadership in the field internationally. After graduating from my master course, I will work in JAXA and want to collaborate with my peers this summer to enhance our space environment in the future.



Brian Badders

University of North Dakota
Grand Forks, North Dakota
Space Studies
bdb25@case.edu
Principal Investigator: Dr. Brad Bailey



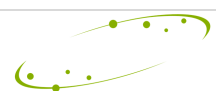
Education and Experience:

I grew up in a rural area near Erie, Pennsylvania. While there would sometimes be an absence of science and technology, this area was a prime location for observing the night sky. At a young age, my father woke me up in the middle of the night and took me outside to witness an amazing meteor storm. At that point, I knew that my interest in space was something that I could not turn away from. I had a great vantage point to look into the incredible world of space exploration that is sometimes so easy for people to ignore. Growing up, I loved to explore by climbing on almost anything there was and taking apart anything I could get my hands on. Fueled by my innate passion for exploration, I excelled in advanced math and science courses throughout my early education.

Meanwhile, I also became very involved in athletics and competed in every sport I could. Having three siblings probably expedited the development of my competitive nature and drove the development of a good work ethic and an appreciation for teamwork. In high school I earned varsity letters in four different sports while being enrolled in the school's most rigorous International Baccalaureate courses. This devotion to athletics and commitment to my education allowed me to develop significant time management, leadership, and teamwork skills which I consistently apply in other aspects of my life.

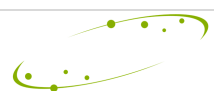
Experience:

My interest in space exploration led me to pursue degrees in Aerospace Engineering and Mechanical Engineering at Case Western Reserve University in Cleveland, Ohio. During my undergraduate career, I applied my leadership and teamwork skills to successfully lead major community service efforts, complete aerospace engineering internships at Lord Corporation, and participated in various intramural athletics. After graduating, I decided to pursue a Master of Science degree in Space Studies at the University of North Dakota in order to focus on the Astronautical engineering aspect of aerospace engineering. My graduate studies have been supplemented through hands on experience with experimental space suits, high altitude ballooning, small spacecraft development, and high power rocketry.



Expectations:

I expect that this summer experience will be challenging as well as rewarding. By combining the academic and professional experiences of this team, we will be able to learn a lot from each other and make progress in several areas of space exploration research. While being mindful that advances in space exploration are not likely to be accomplished through individual efforts, I am excited to take part in this cumulative effort that stresses the importance of teamwork and leadership. This experience will allow the team to gain a better understanding of how NASA functions and provide us with many opportunities to interact with our potential future colleagues. I hope that the Academy experience will be able to further develop and direct our leadership skills in a way that will make us integral parts of the future of aerospace developments.



Janine Baijnath

University of Waterloo
Waterloo, Ontario, Canada

Climate Modeling

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Principal Investigator: Dr. Friedemann Freund



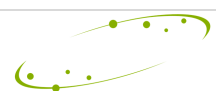
Interests:

Growing up in Southern Ontario, Canada, I have been fortunate enough to experience a variety of weather phenomena from humid summers to wintertime cold snaps, and everything in between. As a child, I remember often gazing up in the sky and asking questions about the origins of our universe and the planet Earth. This curiosity motivated me to pursue a career in Earth and Atmospheric Science. At the age of six, I first told my parents that I wanted to work for NASA. I spent the past 19 years in the pursuit of that dream and I have grown to appreciate the value of the Space Program. NASA's many missions including Aqua, AIM and CloudSat explore the very areas to which I would like to dedicate my professional life. I am undoubtedly excited to become an integral member of the NASA Ames Academy and to share my passion for the Atmospheric Sciences with the rest of the team.

Education:

Currently, I am pursuing a Doctorate of Philosophy (Ph.D.) at the University of Waterloo in Ontario, Canada. There, I am working on joint projects between the University and Environment Canada. I have also obtained a Master of Science (M.Sc.) Degree in Climate Modeling with First Class ranking at the University of Waterloo. I was fortunate to have received several awards for my research and presentations including the Provost Doctoral Award for outstanding research accomplishments at the University of Waterloo. Prior to my Master's degree, I obtained a Specialist Bachelor of Science, Honours (B.Sc.) degree in Earth and Atmospheric Sciences from York University located in Toronto, Canada. As part of my undergraduate degree, I completed a Certificate in Meteorology and a Certificate in Remote Sensing and Geographic Information Systems from York University's Department of Earth and Space Science and Engineering (ESSE).

In addition to my training in the physical sciences, I have successfully completed a certificate program at the Journalism Broadcast Institute of Seneca College in Toronto, Canada. I spent a significant amount of time in a professional newsroom environment where I developed my writing and broadcasting skills that were geared towards weather presenting.



Experience:

I am currently employed as a Meteorologist at the Canadian Broadcasting Corporation (CBC) News Network in Toronto, Canada. Some of my daily responsibilities include conducting national and regional weather forecasts, building weather graphics, conducting briefings and making on-air presentations.

I am also a graduate level Teaching Assistant (T.A.) at the University of Waterloo. I lead laboratories and conduct fieldwork exercises for groups of up to 200 students. As a T.A., I have come to appreciate the importance of clear communication in laboratory work.

In 2009, I had the opportunity to conduct scientific research for two consecutive weeks at the Mars Desert Research Station in the Utah desert. This collaborative project with the Mars Society and NASA provided me with insight into life on Mars.

Extra Stuff:

I also have extensive experience as a runway model. I participated in several competitions in Toronto, Los Angeles and New York where I was fortunate to win several awards. I appeared as a contestant on the hit television show “Canada’s Next Top Model” as well as in various music videos for international music artists. I enjoy composing music, playing the keyboard and dancing.



Emily Briere

Duke University

Durham, North Carolina

Mechanical Engineering

emilybriere@gmail.com

Principal Investigator: Dr. Jeremy Frank and Adam Sweet



Background:

Like so many others, I've dreamed of being in space since I was young. My mom tells me stories of hopping from couch cushion to cushion as a kid, wearing self-constructed astronaut suit gear, defying the "gravity" of deep space. "Houston, we have a problem. Oxygen flow obstructed by... a Cheerio?" Not all oxygen tanks are crafted of a curly straw and an aluminum-foil-covered cereal box, but the equipment apparently was judged to be quite reliable and aerodynamic as I used it often. As I grew up, the topics got deeper and more challenging than navigating around couch cushions. In school, we had learned that space was "infinite" ...something that I am still trying to get my mind around. I don't think we will want for interesting things to talk about this summer!

I was born June 28th, 1993, in Newark, New Jersey along with my twin brother, Nick. My mom calls me her miracle baby because she was expecting twin boys – it seems Nick was a camera-hog during ultrasounds and they kept counting him twice. We soon moved to Mansfield, Connecticut, a small town with only officially a post office and general store, where I have grown up my whole life. Four years later brought two new sibling twins, Chris and Maddie. Being in a family with two sets of twins, we get all sorts of weird questions. I'll answer the most likely ones of yours now:

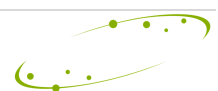
"No, we cannot sense if our respective twins are in danger."

"Yes, we did speak our own language like those twins in the YouTube video."

"No, we are not identical." (we are different sexes, doh!)

"No, we don't have telepathy like those kids in *Escape from Witch Mountain*."

My parents, Danny and Holly, are two of the coolest people I know, and have supported all of us kids through our variety of paths. My dad is an entrepreneur, and my mom is a neuroscientist – this means after-school invention convention with Dad, and weekend science fair projects with Mom. It is no surprise then that today my guiding passion is a fusion of entrepreneurship and science: engineering. I've always had an energetic and curious spirit. Like many other engineers, I ask a lot of questions. When I get an answer I don't like, I try to change it. In some of my most recent summer work, I extended my engineering passion and found a love for scientific research in its potential to explore the known, discover the unknown, and produce tangible change.



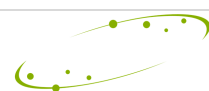
Education, Engagement, and Experience:

I have represented various flavors of innovation, as I co-founded three companies, spent a summer working for a start-up, and am in the ideation process of a new venture. In eighth grade, I was frustrated with my town's lack of communication, so my twin brother and I created MoxMe!, a social alerting network which allows groups to communicate in a highly personalized fashion. In high school, we expanded MoxMe! to include private collaboration, bringing teachers and students together in one place. MoxMe!, saved my school enough money to open a new teaching position, and significantly improved communication in my town. Desiring to promote a love for learning Latin, we next founded Certamen.com, an academic gaming site specifically focused on the Classical languages (coming online this Fall). In order to fund these two ventures, my brother and I run an on-the-side video production company, Cut Out Kids. Attending Angel Investor conferences since age 15, I have learned the intricacies of marketing, networking, and professionalism, but most importantly how to attack problems in a creative way.

My focus grew more global as I grew. I spent summers volunteering in Costa Rica and Cambodia and saw needs first hand; I organized fundraising events to open a scholarship fund at my Cambodian orphanage. Through Engineering World Health I helped design and build a light-bulb adapter for third world countries where the prime cause of death during surgery is not having the correct lighting to see. Good-hearted people from around the world send donated light bulbs, but they all have different socket requirements – we solved that.

In August, 2011, I entered college as a freshman at Duke University majoring in mechanical engineering while also pursuing the aerospace certificate and a math minor. I immediately got involved in Engineering Student Government, Engineering World Health, Duke Venture Forward, and various engineering and entrepreneurship clubs and opportunities. I have spent weekends helping young girls to build electro-surgery unit testers for use in third world hospitals in an attempt to foster a greater love for engineering in the female population. My first two college years have been spent building up a strong background in mechanical engineering and physics, while this upcoming year I will begin my certificate in applying these concepts to aerospace engineering.

This past summer, I was super lucky to be able to replace a second year grad student on a CERC nuclear particle accelerator project when that person dropped from the program. In that, I conducted nuclear physics research as an NSF REU Fellow under Dr. Jones at the University of Connecticut. I was able to synthesize my love for physics with my creative drive, designing and building a calibrating robot for the tagger microscope of GlueX's national quantum chromodynamics experiment. This robot will be a functioning piece of the particle accelerator project, which if successful will be the first to map the spectrum of the exotic hybrid meson. The purpose of the tagger microscope is to "tag" the energy of photons by the energy of their magnet-bent emitted electron via scintillating fibers and silicon photomultiplier sensors. I created a calibrating



robot which remotely traverses the tagger, delivering light pulses down each bundle of scintillating fibers. I wrote a Matlab Monte-Carlo simulation of a Gaussian laser beam to ensure enough light would be received by each fiber for this method to be effective. I published a paper on this research, and presented at the 2012 American Physics Society Department of Nuclear Physics conference earlier this year.

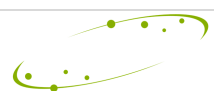
Looking Forward:

The ability to participate in NASA Academy this summer is the opportunity of a life-time that I am so grateful to have. My best college friend jokingly recalls that when we met freshman year and she asked me what I wanted to do in life, I responded, “Work for NASA!” I can’t wait to work in a positive, collaborative environment this summer with others who share that same passion.

I will be studying abroad this upcoming Fall semester in Australia, after which I plan to complete my undergraduate studies and pursue graduate school in aerospace engineering.

Interests:

Running, Soccer, Tennis, Rock Climbing (and really any outdoor activity), scuba diving, exploring/hiking, learning languages and new cultures, and being in the sun with friends!



Marissa Cameron

The University of Texas at El Paso
El Paso, Texas
Geophysics
meesa86@gmail.com
Principal Investigator: Dr. Jennifer Heldmann



Background:

About me: Although I was born in Southern California, my family moved to El Paso, Texas when I was very young. Growing up in the southwest offered me plenty of opportunities to explore, and my family often visited nearby attractions such as Carlsbad Caverns and White Sands, NM. My dad is also an amateur astronomer and frequently took my younger sister and I out with the telescope. I can still remember the first time I saw Saturn through the telescope. I thought for sure my dad was playing a joke on me because of how perfect it looked. That sense of awe from learning about space has followed me from my childhood.

Education and Experience:

I started college as a pre-med biology major. Long story short, I hated it and dropped out. I started working full-time, moved out on my own and forgot about my childhood dreams. After a few years of frustration, I decided to take some evening classes at a local community college and happened on a geology course that reawakened interests I had set aside. I chose to pursue an undergraduate degree in Geology with a generous research stipend, and transferred to the University of Texas at El Paso where I graduated with honors. I worked for a short time on a seismology project, but jumped at a chance to do geophysical research on the icy satellites of Jupiter and Saturn with Ames Academy Alumni, Dr. Bridget Smith-Konter. I continued this research on Europa, Ganymede and Enceladus as I began my Master's in Geophysics in 2012. I hope to defend my thesis at the end of 2013 in preparation for my move to the University of Hawai'i at Mānoa to begin my PhD in 2014.

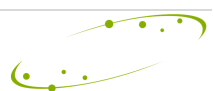
Extracurricular Activities:

I spend a lot of time outside because of my classes, and I love travelling. I've spent time mapping in Death Valley, hiked up volcanoes (dormant!) and countless mountains in at least 5 states, and even done some rock climbing. I enjoy listening to and playing music and have a keyboard, guitar, bass, Irish whistle, trumpet and ukulele. I also make jewelry and draw when I can find the time.

I am looking forward to attending NASA Ames Academy this summer, it's a dream come true. I've never had the opportunity to visit a NASA facility; the thought of working at one seems unreal. I am excited about meeting my peers as well as all the amazing people



at NASA Ames. I hope to gain some valuable insight into the space industry and also sharpen my research skills. It's going to be a great summer!



Thomas Cooney

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Electrical Engineering

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Principal Investigator: Dr. William Warmbrodt and Larry Young



Background:

I'm an enthusiastic electrical engineering graduate from Australia, currently living with my parents and sister in southern Sydney. I enjoy going out with friends, playing board games and painting models; I'm also building a semi-automated model train layout.

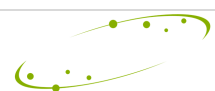
Growing up with Star Wars and Star Trek (as well as Lego), engineering seemed an obvious career choice. I chose Electrical Engineering at the University of New South Wales and received a Co-op Scholarship, which was a fantastic program that let me complete industrial training at four different companies as an undergraduate. These companies offered diverse experiences; I worked on beer filling machines, warehouse logistic systems, electrical substations, and on biomedical microelectronics while completing my degree.

What makes me tick at this early stage of my career is developing a piece of technology from the initial concept and requirements to a working prototype. My specialization so far has been electronic design, which excites me because it has applications across many engineering fields.

Education:

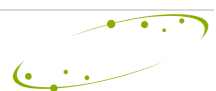
Working as a Graduate Engineer at Cochlear Limited, a biotechnology company that designs, manufactures, and sells implantable hearing solutions, I really enjoy helping improve people's lives through electronic design.

I selected a space engineering topic for my honors thesis in the Australian Centre for Space Engineering Research (ACSER) Garada project. This project involves the design of an L-Band Synthetic Aperture Radar Satellite with the target application of monitoring soil moisture. My work was developing a prototype of the radar instrument Transmit/Receive electronic modules; the prototype featured polarization control of the transmitted pulses and worked successfully during testing. I love the idea of designing electronics for space, as your system has to work well in extreme environments with little supervision or maintenance.



Expectations:

I was really inspired when I visited NASA Dryden in 2010 and saw some of the innovative aircraft on display while I was on academic exchange at the University of California, Santa Cruz. Little did I know that I would be attending the NASA Ames Aero Academy this year! This summer, I am looking forward to learning how NASA works, and how it conducts research and development. I think Australia could have a vibrant and useful satellite program, especially in the field of earth observation due to our large, sparsely populated landscape. Having this opportunity to see a part of NASA from the inside, I will apply this insight working with the engineering community at home.



Lynn Garrett

The University of Chicago

Chicago, Illinois

Mathematics and Computer Science

lynng1124@gmail.com

Principal Investigator: Dr. Jeremy Frank and Dr. Misty Davies



Experience:

When I set my mind to do something, I tend to follow through with it. At the age of eleven, my mom and I challenged each other to go as long as possible without eating meat. Ten years later, I am the clear victor. My passion for space exploration is further evidence of my single-mindedness. When I was in fourth grade, my class took a field trip to Space Camp in Huntsville, Alabama at the end of our unit on astronomy. After experiencing 3 G's in the GForce Accelerator, I was convinced that I had what it took to be an astronaut. Though I strayed from that specific career path, my fascination with outer space remains to this day.

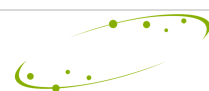
I was born and raised in Louisville, Kentucky, the eldest of four children, and I think both of these facts are reflected in my interests and personality. I've always been told that I have a bit of a motherly personality, comments doubtlessly fueled in part by my love of knitting. My city, on the other hand, is solely responsible for my greatest obsession: University of Louisville basketball (it's been a good year). Overall, I consider myself to be a friendly and easygoing person -- perhaps another symptom of my Southern upbringing.

Professional:

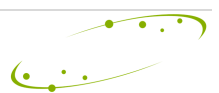
I am a rising fourth-year student at the University of Chicago, where I am pursuing a double major in Mathematics and Computer Science. Beyond my academic pursuits, I captain the Women's Club Lacrosse Team and am a Resident Assistant (RA) in the housing system. This past summer I had the opportunity to intern at Goddard Space Flight Center on the Joint Polar Satellite System (JPSS) Ground Project. This experience definitively showed me that my childhood dream was not out of reach. One of the things I was worried about was that I was enamored with my romantic, but unrealistic, view of NASA and space exploration in general. However, my job this past summer gave me a glimpse of a NASA career, and I decided that I wanted to see more.

Expectations:

This summer, then, I hope to build on my understanding of how NASA functions while gaining valuable research and team-building experience. Moreover, I hope that participating in the NASA Ames Academy will clear up my remaining doubts regarding the potential to apply my academic majors to a career in the space industry. Finally, I

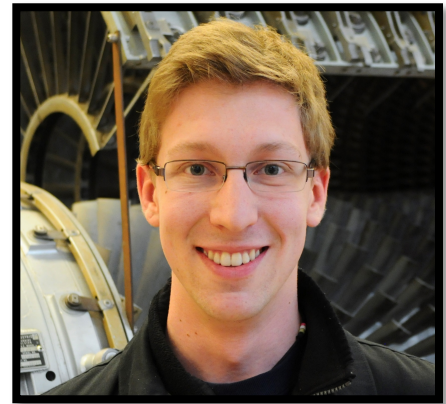


look forward to meeting and building lasting relationships with the other participants and staff members of the Academy.



Karl Gendler

The University of Michigan
Ann Arbor, Michigan
Aerospace Engineering
gendlekd@umich.edu
Principal Investigator: Dr. S. Pete Worden



Education and Experience:

As a small child, my mother used to take me to the library every other week. Each time without fail, I would manage to squirm my way out of her grip and dash off to the science section. Thankfully, all of the books on space were on the bottom shelf, within reach of my eager mind. When my mother finally caught up, there would inevitably be books strewn about me, pertaining to planets, or stars, or some principle of astrophysics. I would pick three and check them out, returning in two weeks to repeat the same process, accompanied by the thrill of expanding my newly found knowledge.

I'm extremely lucky to have retained this same excitement and passion for learning through all my years in academia. This same passion drives me through each semester, to each class, through each assignment, and to higher goals. It is one reason that I joined S3FL, a student-run laboratory dedicated to hands-on space-systems engineering. Through this group, I've absorbed a great deal of basic engineering knowledge, including knowledge of electronic systems, integration, higher level coding, and much more. Seduced by the prospect of new knowledge, I've gathered outside experience with hovercraft fabrication, wind turbine design, and automotive restoration, falling in love with the design and creation aspect of engineering.

About the Summer:

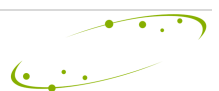
A newfound passion for discovery and innovation has joined my thirst for knowledge, and together they have propelled me into my position this summer at the NASA Ames Academy. I am indescribably excited for this experience and all that I can learn from it. I'm ready to be blown away by the sheer volume of information that will be disseminated, and I'm more than eager to absorb all that I can. I am so privileged to have been given this opportunity. I look forward to working with this group of extraordinary individuals, each of whom will continue on to change the world, one day at a time.

The Future:

In the fall, I will be entering my senior year the University of Michigan. After taking a summer off hopefully to participate in Drum Corp International, I plan to return to the University as a graduate student in the fall of 2014, pursuing a Master's Degree in Space Systems Engineering. Beyond this, my future holds endless possibilities. One



thought that I've fancied for some time now is to return to academia as a professor after I've done my time in industry. The world can never have too many good teachers!



Natalia Larrea Brito

McGill University

Montreal, Quebec, Canada

Aerospace Engineering

natalia.larrea.brito@gmail.com

Principal Investigator: Dr. William Warmbrodt and Larry Young



My Story:

‘Natalia, stop playing with that and go to bed’. I still remember when I used to play for hours and hours as a child with the planetarium I got for Christmas. Back then, I started to read and watch documentaries about space and technology. The more I read, the more fascinated I was. Since then, this fascination has only grown stronger during all these years leading me to where I am today: a graduate student in Aerospace Engineering in Canada, supported by one of the most distinguished scholarships from Spain, after having participated in a traineeship at the European Space Agency (ESA), and now with the realization of a lifelong dream of being part of NASA Academy!

In 2010, I received my MSc in Telecommunications (Electrical) Engineering at Universidad Alfonso X El Sabio in Spain. During my first year I had the chance to visit the installations of ESA in Madrid. I still remember the feeling of being there and wishing that I could be part of that someday. What I could not imagine was that life would bring me the opportunity to work there years later.

For the last year of my degree, I decided to study abroad. I wanted to acquire more international experience and specialization, which is why I went to École Polytechnique de Montreal in Canada. There, I specialized in space technologies and developed my final thesis. My research contributed to the validation of an innovative microwave tomography system for breast cancer detection, a future non-invasive alternative to the current mammography system.

I finished my degree but my desire of learning more about space continued to grow. I had always been interested in astrophysics so I decided it was time to learn about space from a more scientific point of view. Therefore, I studied the program in Astronomy and Planetary Science at The Open University UK, which I completed in 2012. It was that year when I saw one of my biggest wishes come true: I was selected for the ESA trainee program at the European Space Astronomy Centre (ESAC). During my traineeship I had the opportunity to work in the Herschel Space Observatory team. My project consisted in the development of different methods for the generation of high-fidelity galaxy catalogues. Besides, ESA invited me to present my work at the HIPE Forum in Germany, one of the largest forums of the Herschel mission. After my traineeship, I got a short contract with the Herschel Community Support Group to generate statistics on all related publications about the mission.



That same year, I was honored to receive one of the most prestigious scholarships in Spain (La Caixa Fellowship) to pursue postgraduate studies in Canada in 2012-2014. Only five students are awarded this scholarship nationally amongst all disciplines. This is how I came to McGill University where I am currently studying towards a master's degree in Aerospace Engineering.

Now I have been given the chance of a lifetime to be a part of NASA Academy. There, I will have the opportunity to work with some of the best space related young professionals and continue growing professionally in this high performance context. Thanks to ESA's sponsorship and the continuous, unconditional support of my family, friends, and all those who have believed in me through all these years, my biggest dream has now become reality.

I know now, more than ever, that I want to continue my career in the space field. After my time at NASA Academy and when I have finished my master, I would like to continue with a PhD in Space Engineering. I hope one day to be able to count myself as one of those lucky enough to have a career at ESA or NASA.

My Interests:

My passion for space is also shared with a variety of activities in my free time. One of the things I enjoy the most is to express my creativity by writing short stories, drawing and performing puppet theatre shows for children. One of my near-future projects is to create a group to make a YouTube show that explains the basic concepts of space and science with puppets for kids. In addition, I enjoy travelling, volunteering, reading, cinema, crafts and doing sport (gym, self-defense and pilates).



Michael McCarty

The University of Illinois at Urbana-Champaign
Urbana, Illinois

Bioengineering

mkmccarty3@gmail.com

Principal Investigator: Dr. Chris McKay and Arwen Davé



Experience:

When I was a kid, I used to think flying remote controlled planes and shooting off model rockets was what I wanted to do in life. I would stay up late at night gazing off at my glow in the dark wallpaper depicting the night sky. As our tiny earth would orbit around the toy mobile on the ceiling, I would dream of traveling throughout the galaxy discovering the vast unknown. One day, before I “realized” this isn’t a real job, I started reading the encyclopedia of amphibians. Because my parents believed this would eventually lead me to becoming a doctor, I was lured into biology. Spending my days roaming around my neighborhood collecting frogs and salamanders, I would categorize them and place them in separate containers. I may have only been 7 years old, but I was already torn between building model rockets and my new found passion for collecting amphibians. Today, I can say I have the chance, once more, to live my childhood dream as I venture to NASA for the 2013 summer academy.

Education:

Over 15 years later, I successfully struck the perfect combination of everything I loved to do as a child, since I am now a senior at the University of Illinois at Urbana-Champaign in the Bioengineering department. Although I always knew what I loved to do, I promised myself when I got into college that I would treat it as an adventure. I decided it would be more important to try everything possible, and fail, than finish college and realize I haven’t done any of the things I really wanted to try. Over my 4 years in college, I have experimented with doing research in everything from cell and tissue engineering, nanotechnology, and biomaterials, to bioinstrumentation, computational bioengineering, and biomechanics. While I didn’t enjoy all of the work I did, I discovered more about myself than I have ever known, as well as, learned new techniques to combine all of these amazing fields.

During this last year, I have been working on the micro/nanofabrication of epidermal electronics in Professor John Roger’s research lab. Some of the wearable devices that I have specialized on include micro-antennae, hydration sensors, and thermal sensors. The fabrication of all these devices was only possible because of the mentorship I received by Dr. Jonathan Fan. Recently, I started a new collaboration for which we will be combining the novel electronics that are produced in Prof. John Roger’s lab with the tissue engineering applications, such as muscles, nerves, and skin that are artificially grown in Prof. Hyunjoon Kong’s research lab.

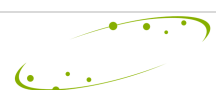


Other than the research I have been conducting for the development of epidermal electronics, I have been working on my senior design project in Professor Rashid Bashir's lab. After listening to a lecture on how entrepreneurship has influenced his research, I knew I would do whatever it took to get the chance to work in his lab. Once I heard he would be taking students for a senior design project, I jumped at the opportunity to work in his Laboratory for Integrated Bio Medical Micro/Nanotechnology & Applications. This project consists of fabricating devices that are capable of rapid bacterial detection using electrical impedance measurements. With this technology we hope to be able to detect bacterial growth faster and more accurately than any current system on the market. With such amazing guidance and support, this project has landed us in several business competitions as well as being selected as a 2013 Clinton Global Initiative.

Although it may sound strange, getting into business competitions isn't anything foreign to me. My freshman year consisted of one of the most fun years of my life; however, by the end of my second semester I knew I was missing something. Over that summer, I spend day and night working on my coding skills. At the conclusion of the summer, I had constructed several websites and trivial mobile applications that helped me polish my skills. Nearly 3 years later now, I am managing 22 employees and interns who remind me every day of the joy I get from making things. Although there is never downtime fixing the bugs the new guy is creating, meeting to discuss objectives for each team, or running over-night hackathons, I will always remember how much fun we have while we are hacking together. Several of the exciting things we have made and have received funding for include: A mobile second-screen application for TV, wireless EKG/pulse plethysmograph/ultrasound, and Bluetooth enabled appliances. It is my ambition, that no matter where I end up in life, I will find myself creating companies or projects outside my daily job that I am excited to wake up and work on every day.

Future Plans:

Looking back at my brief life so far, there have been times I wandered being completely lost, but with some luck and perseverance, I managed to look around and find a trembling beacon that would guide me to my next adventure. I can't anticipate the future, but I will be going into it swinging the whole way.



Lauren McMahon

Johns Hopkins University
Baltimore, Maryland
Biology
mcmahlau@gmail.com
Principal Investigator: Lee Bebout



Background:

My fascination with biology began in my freshman year of high school thanks to an influential teacher known to karate chop the air and use a loud, staccato voice for each mention of “sto-MA-ta” during plant lectures. As a student in the Academy of Science and Technology in The Woodlands, Texas, I took advantage of every opportunity to investigate the various aspects of biology through classes, competitions, seminars, a research trip to Alaska, job shadowing a doctor, and becoming the first-ever high school intern at Sigma-Genosys.

Education:

At Texas A&M University as a President’s Endowed Scholar, I focused on improving my molecular biology techniques while researching in Dr. Gil Rosenthal’s lab. The project in which I was most involved studied the genetic mating system of *Xiphophorus birchmanni* by genotyping 40 gravid females and their offspring to determine parentage and the rate of multiple mating. Being part of this project led to my interest in genetics, DNA analysis, and basic research. I also conducted wildlife research in New Zealand in a study abroad program with Dr. Bernd Würsig. The research projects in the program focused on the behavioral ecology of dusky dolphins, and they gave me my first taste of field work. As much as I love working in the lab, getting out into the field was an incredible experience which I hope to have again in the future.

Experience:

After receiving my Bachelor of Science degree in Biology, I became a Spaceflight Microbiologist at NASA Johnson Space Center (JSC). I currently work in the Environmental Microbiology Laboratory, so my tasks primarily consist of processing air, surface, and water samples from the International Space Station (ISS), NASA centers, and commercial vessels (SpaceX’s Dragon and Orbital’s Cygnus) as well as collecting and processing preflight samples for the ISS to ensure crew health. When I isolate bacteria from these sources, I identify them through biochemical methods or genetic sequencing. I also conduct research experiments such as determining the efficacy of different biocides on bacterial growth for future applications of inflight electrochemical disinfection of water for the ISS, determining the amount of times microbial removal filters can be used to disinfect potable water, and testing to find a urine pretreatment mixture that is less harmful to humans but still effective against bacteria for use onboard the ISS. I love being a team player but really enjoy honing my leadership skills by taking

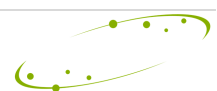


on the responsibility of larger and larger projects. In addition to my everyday work, I am pursuing a Master of Science degree in Biotechnology from Johns Hopkins University by taking coursework online each semester.

When I started working at JSC, I had no idea how much biological research was going on at NASA. I began to read about the extensive research occurring at all of the centers, and I came across the term “astrobiology.” I had never before heard of this field, but the more I read about it, the stronger my interest became. I have been broadly interested in studying evolution, but I did not know how my skills and other interests would fit into the picture. In the Ames Academy, I look forward to combining my NASA microbiology experience with my interest in early evolution. I am excited to learn as much as I can about astrobiology, microbial ecology, and how I can contribute to these fields. In the future, I intend to pursue a Ph.D. from one of the schools participating in the NASA Astrobiology Institute to more deeply study evolution in an astrobiological context. I am also anxious to learn how to document some of the research I have already conducted with an end toward publishing these processes and my findings in scholarly and scientific journals. My eagerness to do so stems from my familiarity with the procedure from helping edit my doctoral parents’ submissions in their widely disparate fields of study – music and information systems.

Future:

Outside of work, I love to dance any style I can learn, having started with ballet at age 3 and progressing through several years at the prestigious Houston Ballet Academy. Most recently, I enjoyed taking salsa lessons at JSC’s recreation center and dancing in the “NASA Johnson Style” YouTube video. I also enjoy learning languages, so I took Russian classes at JSC’s Language Education Center as a follow-up to my undergraduate Spanish minor. I think that outreach is critical, so I served as a mentor for the High School Aerospace Scholars Program and am involved in recruiting university students into our JSC Pathways Intern Program. Since I also consider inclusion to be vital, I have been very involved in both the Hispanic and the Out & Allied Employee Resource Groups at JSC.



Quentin Nénon

Institut Supérieur de l'Aéronautique
Toulouse, France
Aeronautical and Astronautical Engineering
q.nenon@gmail.com
Principal Investigator: Dr. Peter Jenniskens



Background:

I was born on June 10, 1991 in Gisors, France. I am the second born of a four-child family. I grew up in *Lalande-En-Son*, a little village in the north of France until fourteen and then we moved to Poitiers where I adapted quite well. As my father is an automotive engineer he has often travelled abroad. Once, as he went to Australia he explained to my brothers and me why it is night in Australia while it is day in France with a basketball and a torch. It was the beginning of a strong passion for science and space.

I have developed my intellectual curiosity and been a critical thinker by reading science reviews and by watching a famous French daily documentary dealing with scientific, economic and cultural subjects. Besides, I built a line-following robot which helped me to acquire an analytical mind. I also was able to travel to different countries during my adolescence. This taught me to be open minded. In addition, the opportunity I had to visit the Cape Canaveral Launchpad when I was twelve strengthened my desire to work in the field of space sciences.

Education and Experience:

I obtained my high school diploma with honors in engineering sciences with a specialization in mathematics. I also won a physics contest on the electron and its history in 2008. Then, I went into the French “classes préparatoires” to prepare the entrance exam into Supaéro, the leading French Graduate School of Aerospace Engineering. At the end of the first year of my engineering studies, I took the major Astrophysics which enabled me to learn more about global astrophysics. In addition to my engineering school, I have had the chance to take part in significant space projects such as a Star Tracker project and a 3U Cubesat design. The nanosatellite, called EntrySat, is planned to be launched in 2015 as a cubesat of the QB50 constellation, a project initiated by the Von Karman Institute of Brussels, and will study the re-entry of small debris in the atmosphere. I am also the president of the school Space Pole. It has been an honor for me to promote space sciences at school and in the city of Toulouse.

Extracurricular Activities:

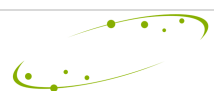
Furthermore, I attach a lot of importance to the work-life balance. I have practiced sports since childhood. I enjoy running, swimming, climbing, rowing and as often as possible, I practice snowboard. As I like watching movies, I participated in a cinema



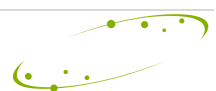
course in which I did an analysis of the *Inland Empire* movie of David Lynch. I also like hanging out with my friends. I am used to visiting cities and regions in France and abroad, mostly during holidays. During my second high school year, I discovered guitar thanks to a friend. I play both electric and classic guitar. I also played massively-multiplayer-online video games which shaped my spirit of competition and my ability to work in a team.

Future Plans:

What I am striving to do now is to obtain my master's degree in aerospace engineering, so that I can then apply for a Ph-D in space science and have the opportunity to work on space exploration.



2013 Staff Profiles



Dr. Brad Bailey

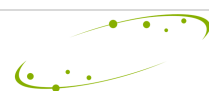
Director for the NASA Ames Academies
NASA Lunar Science Institute Senior Scientist
NASA Ames Research Center
Moffett Field, California
brad.bailey@nasa.gov



Brad received his B.S. in physics with minors in optics, chemistry and Japanese from Rose-Hulman Institute of Technology. From there, he went on to receive his M.S. in astrophysics from New Mexico Tech where he used the Very Large Array (VLA) to qualitatively analyze spectra from pulsars. After working for 2 years at NASA Ames as a hardware engineer for the International Space Station, Brad went back to graduate school at Scripps Institution of Oceanography in San Diego where he got his PhD in marine microbiology and geochemistry. In addition to being the Director of the NASA Academy, he also acts as the senior scientist for the NASA Lunar Science Institute.

In 1998, Brad was accepted into the NASA Ames Astrobiology Academy where he worked with PIs Lou Allamandola and Doug Hudgins on the spectroscopic determination of polycyclic aromatic hydrocarbons in the interstellar medium. He enjoyed the Academy experience so much that he came back in 1999 to work as a staff member for the Academy.

With his varied scientific background, Brad will be a good contact and resource for students looking to break into new fields of interdisciplinary science and for graduate school advice. The Academy was a life-changing experience for Brad as he would otherwise be working at an optical plant as an engineer in Albuquerque, NM without the experience and contacts that the Academy gave to him. Brad is excited to give back to the Academy in this capacity and is looking forward to meeting all of the Research Associates when they arrive in June!



Dr. Douglas A. O'Handley

*Emeritus Director for the NASA Ames
Academy for Space Exploration*
NASA Ames Research Center
Moffett Field, California
dohphd@earthlink.net



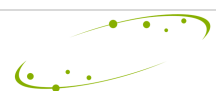
Doug O'Handley is returning for the 15th year with the NASA Ames Academies. He initiated the Academy in 1997. He retired from NASA after forty years in the government and academia in 1999. He currently is employed by Lockheed Martin to continue activities with the Ames Academies.

Upon graduation from the University of Michigan, Ann Arbor, Doug worked for the Time Service and Nautical Almanac Offices of the U.S. Naval Observatory, Washington, D.C. Attending Yale University, he received a Masters and PH.D. in Celestial Mechanics, and he then joined NASA's Jet Propulsion Laboratory. He carried out the development of the first numerically integrated ephemeris for the solar system in support of the early Mariner missions to Mercury, Venus, and Mars and the Apollo program. He took the challenge to enter management and led early research in artificial intelligence and biomedical technology.

Doug came to Ames as head of the Space Station and Technology Transfer Office in the Director's Office at Ames in 1984. Doug returned to Southern California to work in the private sector at TRW in Redondo Beach in 1986. He joined NASA Headquarters in 1988 as the Deputy Assistant Administrator in the Office of Exploration. This was at the time when George Bush announced that the U.S. would place humans permanently on the Moon and venture on to Mars early in the 21st century. Returning to Ames in 1992, Doug joined the Space Sciences Division. That is when he started planning for the Academy in 1996.

Doug is a fellow of the Royal Society of Medicine, England, a Fellow in Aerospace Medicine, a Fellow of the American Astronautical Society, and an Associate Fellow of the American Institute of Aeronautics and Astronautics. In addition, he is a member of the International Astronomical Union and the International Academy of Astronautics, and the American Astronomical Society. He chaired, for 10 years, the Space Exploration Committee of the International Astronautical Federation.

Doug welcomes all of you and looks forward to you becoming part of the extended O'Handley family.



Kristina Gibbs

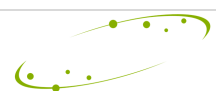
Program Manager for the NASA Ames Academies
Lockheed Martin Line/Task Manager
NASA Ames Research Center
Moffett Field, California
kristina.gibbs@nasa.gov



Kristina Gibbs is the Deputy Program Manager for the Academy and the Lockheed Martin Manager overseeing the Academies' daily operations. In addition to this task, Kristina manages support for other NASA organizations including the NASA Astrobiology Institute and the NASA Lunar Sciences Institute. Kristina also has the responsibility for strategic planning and hiring the Academies' staff and drivers.

Until recently, Kristina has been working for Lockheed Martin in support of NASA Ames Life Science Payloads for over 15 years. She first started as a liaison between NASA and the Principal Investigators of the Mir /Shuttle payloads, working collaboratively with Russian Researchers. From 1999 to 2002, Kristina was the Project Scientist for two of the first life science payloads in the ISS. As the first Lockheed Martin employee to manage a NASA payload, Kristina facilitated microbiology hardware development and flight operations. Kristina has supported over 10 Mir, STS and ISS payloads and over 20 Principal Investigators. Just over a year ago Kristina was appointed as Manager to the Lockheed Martin Institutes and Collaborative Technologies section.

Kristina is looking forward to your arrival and working with you this summer.



Desireemoi Bridges

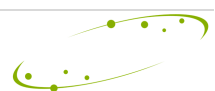
*Program Coordinator for the NASA Ames Academies
Lockheed Martin Purchasing Support
NASA Ames Research Center
Moffett Field, California
desireemoi.r.bridges@nasa.gov*



Desireemoi Bridges is the Program Coordinator for the NASA Ames Academies. Desi has had a hand in coordinating all the operational needs of the 2010-2013 Academies. She gets things done efficiently and with minimal collateral. Desi is available to help you and the staff with any logistical issues.

Desi joined Lockheed Martin three years ago as an administrative assistant. In addition to working with the NASA Ames Academies, she is supporting the NASA Aeronautics Research Institute and working as a purchasing liaison for Lockheed Martin. Prior to working with us, Desi was employed as a funding specialist and software tester in the mortgage industry.

Desi looks forward to working with all of you.



Michael Zero

Deputy Director for the NASA Ames Academies
Lockheed Martin Mechanical Engineer
NASA Ames Research Center
Moffett Field, California
michael.j.zero@gmail.com



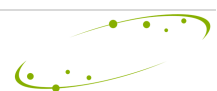
Above all else, NASA's purpose is to inspire and unite the world by continually breaking the bounds of what we "know" as humankind. I have always been moved by the wondrous accomplishments of the employees of NASA and strive to contribute to the philosophical vision of the Agency. My goal of spreading NASA's vision led me to the Academy.

I received a Mechanical Engineering B.S. Degree from Rose-Hulman Institute of Technology in May 2012 with a concentration in Aerospace Engineering and minors in Mathematics as well as Language and Literature.

Prior to my senior year at Rose, I was fortunate enough to participate in the 2011 NASA Ames Academy for Space Exploration working with Dr. William Warmbrodt and Mr. Larry Young in the Aeromechanics Branch researching the feasibility of wireless charging stations for autonomous helicopters in emergency response applications. I returned to the Academy as a Staff Assistant in 2012 and will be providing support once again this year.

The Academy helped me secure a full-time position at Ames as a Lockheed Martin contractor developing International Space Station payloads. My first space payload successfully launched and returned on the SpaceX-2 flight in March 2013, and my second payload is scheduled to fly on the SpaceX-5 launch.

The two summers I have been involved in the Academies at Ames have been incredibly impactful on my life, and I would like to give back to the program that has helped me so much. I fully believe this summer will exceed your expectations because I know that the management team is relentless in ensuring you are afforded unique opportunities. I am impatiently awaiting the beginning of the Academies and offer any help I can provide during the coming months and beyond.



Alana Bartolini

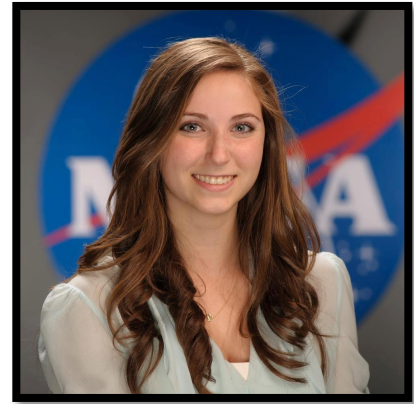
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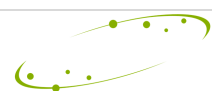
When I was thirteen years old, I sat in the theater of Space Camp Canada in Laval, Quebec. The Drifter's song "*Up On the Roof*" played in the background while I watched footage of astronauts drinking water on the International Space Station. That moment sparked a curiosity in how the human body adapts to microgravity, and my fascination with space exploration began.

I completed my Bachelor's degree at McMaster University in Hamilton, Ontario. During my time in the program, I had the opportunity to take space medicine classes, where I explored the physiological impacts of space flight on the human body. I studied microgravity-induced changes to the cardiovascular, neurovestibular, neuromotor, and immune systems, as well as sleep pattern and nutritional alterations in astronauts. The inspiration from these classes has played a large role in my continuing goal to advance microgravity related medical research and support manned spaceflight.

During my undergraduate degree I had a large focus on clinical orthopaedic research. While shadowing an orthopaedic surgeon in Toronto, I completed research regarding patient satisfaction with different implant types, and reduction of transfusion rates in bilateral knee arthroplasty through the use of Tranexamic Acid. The latter of these studies showed significant results, which led to its presentation at the Canadian Orthopaedic Association, and my co-winning of the Dr. Barry Tobe Award for innovation and excellence in medical care. My recently completed undergraduate thesis focused on the clinical outcomes of manipulation under anaesthesia after primary total knee arthroplasty. This work gave me a clinical perspective on patients suffering from bone disease, and motivated me to gain an understanding of the underlying cellular mechanisms.

In the summer of 2012, I was selected to be the Canadian Space Agency delegate at the NASA Academy at NASA Ames Research Center. I worked in the Bone and Signaling Laboratory, mentored by Dr. Ruth Globus and Dr. Josh Alwood, researching the long-term inflammatory effects of microgravity and radiation on osteoclasts/blasts/cytes. I am currently still at Ames, working with Dr. Eduardo Almeida on hyper- and micro-gravity effects on pre-osteoblast stem cells.

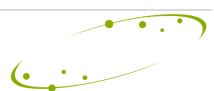
After staffing the academy this summer, I plan to pursue my MSc through a Canadian institution in conjunction with NASA Ames.



Interests:

My background is in competitive dance where I trained for 10 years in the styles of jazz, tap, ballet, acro, contemporary, and modern. While competing nationally with my studio, I also attended a performing arts high school where I captained the semi-professional modern company. I have completed the Royal Academy of Dance Vocational Ballet Examinations, grades 1 through Advanced 2 and captained the McMaster Dance Company throughout university. I continue to dance in my free time.

Additionally I enjoy music, movies, travelling, adventures, and drinking maple syrup by the gallon.



Stephanie Gowell

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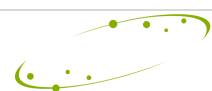
Education and Experience:

I remember drawing a masterpiece, or what I thought was a masterpiece, while in my elementary art class. It was a watercolor paint and crayon drawing of space with me portrayed as an astronaut in it. Clearly, I was drawn to space even as a child, but I didn't consciously discover my passion for space until college.

I was fortunate enough to stumble upon my most rewarding campus experience, the Student Space Systems Fabrication Laboratory (S3FL), during my freshman year at the University of Michigan. S3FL challenged me over the past five years as a leader and a student. It opened my eyes to aerospace engineering, which soon became my major. My experiences on a CanSat project my freshman year and advising the CanSat project my sophomore year led me to CubeSat research and projects in S3FL for the rest of my undergraduate career. I had the privilege to project manage a CubeSat boom project my junior year, which I was lucky enough to fly with onboard NASA's "Weightless Wonder" with my teammates. My senior year I focused on the administration side of S3FL and spacecraft operations for the University of Michigan CubeSats. In the past year, I started working towards my Masters of Engineering in Space Systems and focused my energies on leading S3FL as an organization and leading a CubeSat plasma thruster propellant tank research project in the Aerospace Department at U of M.

In the middle of my junior year, I also became heavily involved in the University of Michigan's Students for the Exploration and Development of Space (SEDS) Chapter's council, which leads the SEDS' initiatives on campus. Through my efforts with SEDS, I found a different view of space. Until I became involved in SEDS, I'd only focused on building/engineering projects because the "design, build, and test" process seemed interesting, not WHY space is amazing or needs these projects for exploration. Something changed in me after attending many of the campus lectures hosted by SEDS, but it was after Newspace 2011 that I completely understood that a career in the space industry is what I have to do with the rest of my life. I want to engineer spacecraft that enable science missions to explore planets and bodies and to learn about our origins and future.

SEDS has also offered me opportunities to be involved with congressional visits in Washington, D.C., which led to my fascination in space policy. I think it is important for everyone to be informed and to advocate for space exploration and feel very lucky to



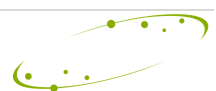
have had the opportunity to participate in congressional visits once a year for the past three years.

Interests & Expectations:

NASA Academy was and is my dream come true! I feel very privileged to have participated as an Academite last summer in the NASA Ames Academy for Space Exploration. I learned a lot about myself, leadership, teamwork, NASA, and engineering. It was an experience unlike any other. I am honored and excited that I was selected as a staffer to help others have a similar experience. I look forward to continued growth through experiences with students and staff.

Future Plans:

I plan on returning to the University of Michigan in the fall to finish my final semester in my master's program. Upon completion of my masters, I plan to go work in the space industry as an engineer. At some point, I'd also like to be involved in space policy/advocacy. My ultimate goal, however, is to go to space myself one day!



Mark James

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When I was ten years old, my class read the book “October Sky” by West Virginian author Homer Hickam. From that point on, I knew that I wanted to be an astronaut for NASA.

My undergraduate education was spent at West Virginia University where I obtained bachelor’s degrees in both aerospace and mechanical engineering. During my studies, I was fortunate enough to be selected as a member of WVU’s Microgravity Research Team (MRT). This student-led research group develops, proposes, designs, and constructs an experiment to be flown aboard NASA’s Zero-G “Weightless Wonder” research aircraft. I learned much in my two years with this program as our team developed and built experiments on magnetically controlling fluid slosh and electromagnetically enhancing a fluidized bed in microgravity.

Between my times on the MRT, I decided to expand my horizons and study abroad in the beautiful country of New Zealand. I spent five months at Auckland’s Massey University studying mechanical engineering and spending weekends and breaks exploring the breathtaking North and South Islands.

This combination of a love of NASA research and traveling inspired me to apply to the NASA Academy system. As a participant in the 2012 NASA Ames Academy, I had the opportunity to work on the Guidance, Navigation, and Control (GN&C) subsystem of NASA’s Lunar Atmosphere and Dust Environment Explorer (LADEE). Mentored by Mr. Michael McIntyre and Dr. Butler Hine, I worked on the characterization of the coarse sun sensor suite of the LADEE three-degree of freedom (3-DOF) model.

After staffing the 2013 Academy this summer, I look forward to attending Stanford University for an M.S. in Aeronautics and Astronautics.

Interests:

In my spare time, I enjoy traveling, reading, and playing a variety of sports. I mainly focused on track and cross country in high school, but I recently have become interested in basketball, football, and disc golf. I am a huge fan of WVU athletics, and I strive to attend as many events as I can.

